

**REMARKS**

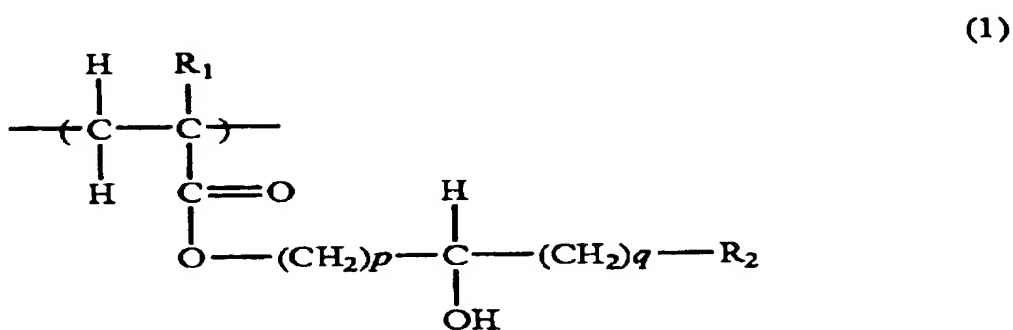
Claims 1, 2 and 6-10 are pending in this application. In view of the following remarks, reconsideration and allowance of the claims are respectfully requested.

**I. Rejections Under 35 U.S.C. §103**

The Office Action rejects claims 1, 2, 6 and 8-10 under 35 U.S.C. §103(a) over WO 02/05035 to Takei et al. as evidenced by U.S. Patent Application Publication No. 2003/0146416 ("Takei"); and rejects claim 7 under 35 U.S.C. §103(a) over Takei in view of U.S. Patent Application Publication No. 2002/0110665 to Rutter et al. ("Rutter"). Applicants respectfully traverse the rejections.

For at least the reasons presented below, Applicants submit that Takei and Rutter, as applied in the Office Action, would not have rendered obvious each and every feature of claims 1 and 2.

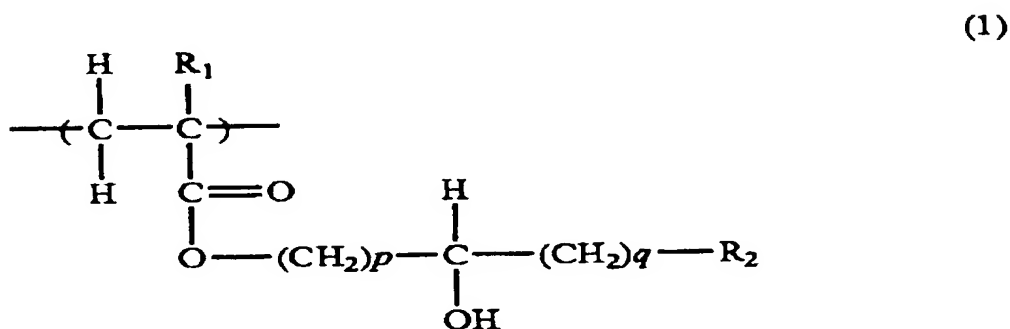
Claims 1 recites a gap fill material forming composition comprising, *inter alia*, a polymer having a weight average molecular weight of 5,000 to 20,000 that is composed of only structural units of formula (1)



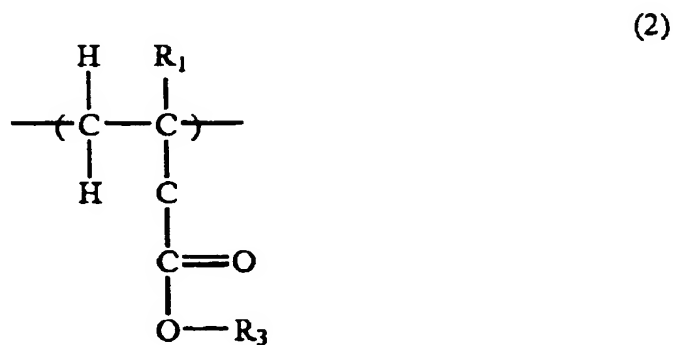
wherein R<sub>1</sub> is hydrogen atom, methyl group, chlorine atom or bromine atom, R<sub>2</sub> is hydrogen atom or hydroxy group, p is the number of 1, 2, 3 or 4, q is the number of 0, 1, 2 or 3, and containing components having a molecular weight of 3000 or less in a rate of 20% or less; a

crosslinking agent; and a solvent selected from the group consisting of butyl lactate, propylene glycol monobutyl ether, propylene glycol monomethyl ether, propylene glycol monomethyl ether acetate and cyclohexanone.

In addition, Claim 2 recites a gap fill material forming composition comprising, *inter alia*: a polymer having a weight average molecular weight of 5,000 to 20,000 that is composed of structural units of formula (1) and structural units of formula (2)



wherein  $\text{R}_1$  is hydrogen atom, methyl group, chlorine atom or bromine atom,  $\text{R}_2$  is hydrogen atom or hydroxy group,  $p$  is the number of 1, 2, 3 or 4,  $q$  is the number of 0, 1, 2 or 3; and



wherein  $\text{R}_1$  is as defined above,  $\text{R}_3$  is  $\text{C}_{1-8}$  alkyl group, benzyl group,  $\text{C}_{1-6}$  alkyl group substituted by at least one fluorine atom, chlorine atom or bromine atom, or  $\text{C}_{1-6}$  alkyl group substituted by at least one  $\text{C}_{1-6}$  alkoxy group, and the polymer containing components having a molecular weight of 3000 or less in a rate of 20% or less, and containing the structural unit

of formula (1) in a ratio of 0.40 to 0.95; a crosslinking agent; and a solvent selected from the group consisting of butyl lactate, propylene glycol monobutyl ether, propylene glycol monomethyl ether, propylene glycol monomethyl ether acetate and cyclohexanone, wherein the sum of the molar ratio of structural unit of formula (1) and the molar ratio of structural unit of formula (2) is 1.

Applicants assert that the applied references and the Office Action fail to provide any reason or rationale for one of ordinary skill in the art to have modified Takei or Rutter to have included each and every feature of claims 1 and 2 without benefit of Applicants' specification.

Although Takei allegedly describes polyhydroxypropyl methacrylate as an example, the polyhydroxypropyl methacrylate is a component that is copolymerized with 4-methoxyphenol and, thus, Takei does not disclose sole use of polyhydroxypropyl methacrylate (Takei, paragraph [0127]). In addition, Takei discloses that preferable polymers include homopolymers comprising repeating units of formula (1); copolymers comprising repeating units of formula (1) and the repeating units copolymerizable therewith; homopolymers comprising repeating units of formulas (1) or (3); or copolymers comprising repeating units of formulas (1) to (7) (see Takei, paragraphs [0021]-[0036]). Each of these embodiments necessarily contain vinyl phenol in its repeating units.

Takei goes on to disclose the following examples illustrating embodiments of the Takei disclosure:

- Examples 1 and 2: copolymer of p-vinyl phenol with styrene (see Takei, paragraphs [0131] and [0132]);
- Examples 3 and 4: brominated p-vinyl phenol (see Takei, paragraphs [0133] and [0136]);
- Example 5: copolymer of p-vinyl phenol with methylmethacrylate (see Takei, paragraphs [0137]);
- Example 6: novolak type phenol resin (see Takei, paragraph [0138]);
- Examples 7-11: copolymer of p-vinyl phenol with methylmethacrylate (see Takei, paragraphs [0140]-[0144]);
- Comparative Example 1: polyethylene glycol (see Takei, paragraph [0145]);

Comparative Example 2: polyacrylic acid (see Takei, paragraph [0146]);  
Comparative Example 3: polyhydroxy propyl methacrylate (see Takei, paragraph [0147]); and  
Comparative Examples 4 and 5: copolymer of p-vinyl phenol with methylmethacrylate having a low boiling point (see Takei, paragraphs [0148] and [0149]).

It should be noted that Examples 1-5 and 7 contain vinyl phenol; whereas Comparative Examples 1-5 contain acrylic polymers. With respect to Examples 1-4 versus Comparative Example 1, Takei discloses that the planarizing factor of the film obtained by the compositions of Examples 1-4 was "larger than that of Comparative Example 1, with particularly excellent planarizing ability in Dense pattern that requires severe conditions" (Takei, paragraph [0159]). Takei discloses similar results with respect to: (1) Examples 1-3, 5 and 6 versus Comparative Examples 2 and 3; and (2) Examples 7-11 and Comparative Examples 4 and 5. In each of these cases the planarizing factor of the Examples was larger than those of the Comparative Examples (see Takei, paragraphs [0163] and [0165]).

Based on the above, one of ordinary skill in the art would not have had any reason or rationale to modify the disclosure of Takei to include each and every feature of claims 1 and 2, at least because Takei discloses that: (1) p-vinyl phenol polymers or p-vinyl phenol copolymers should be used in the composition; and (2) acrylic polymers such as polyethylene glycol, polyacrylic acid, polyhydroxypropyl methacrylate and the like should not be used, at least without copolymerization, based on the planarizing ability as evidenced by the experimental test results disclosed in Takei.

The Office Action merely applies Rutter as allegedly disclosing additional features recited in dependent claim 7 and, thus, Rutter does not cure the deficiencies of Takei with respect to claims 1 and 2. More specifically, Rutter is directed to compositions and methods for protecting apertures in the manufacture of electronic devices (see Rutter, Abstract).

Takei and Rutter, as applied in the Office Action, would not have rendered obvious claims 1 and 2. The remaining claims variously depend from claim 1 and, thus, also would not have been rendered obvious by the applied references, for at least the reasons set forth above. Accordingly, reconsideration and withdrawal of the rejections are respectfully requested.

**II. Conclusion**

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Attachment:  
Petition for Extension of Time

Date: December 11, 2009

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